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8 August 1955

MEMORANDUM TO: Chief, EE/TEC**SUBJECT : Film-Destroying Burial Containers**

1. In compliance with your request, TSS/ED and TSS/TSL have designed and fabricated three burial containers with film-destroying mechanisms.
2. Each container can hold about 49 feet of 35mm microfilm. The destroying mechanism is based on the reaction of nitric acid with zinc to destroy the emulsion of the film.
3. Each container was submerged overnight under five feet of water, with no leakage resulting. Complete instructions are enclosed.

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Chief
TSS/Engineering Division

DS/P/TSS/ED



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INSTRUCTIONS FOR USING THE
FILM-DESTROYING BURIAL CONTAINER

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IMPORTANT: Read these instructions before using the film-destroying burial container. Failure to observe the proper operating procedure can result in destroying the interior mechanism and rendering the container useless.

OPENING THE CONTAINER

1. Stand the container on the end which has the circular recess at its center. The upper end is smooth and has no recess.
2. Both ends are screwed onto the container shell. THE END WITH THE CIRCULAR RECESS MUST NOT BE TURNED IN EITHER DIRECTION WITH RESPECT TO THE CONTAINER SHELL, AS THIS ACTIVATES THE DESTROYING MECHANISM.
3. Place the magnet on top of the container. (On the smooth end.) A clearly audible click will be heard from within the container.
4. The smooth cover can now be unscrewed by turning in a counter-clockwise direction.

STORING FILM IN THE CONTAINER

1. Remove the cover securing mechanism from the opened container by loosening the brass thumb screw until the extension clip can be raised and slid backwards over the slotted locking ring.
2. Remove the film viewer.
3. Remove upper zinc plate.
4. Remove the film stack by lifting the wire running through the center of the stack.

Film is stored by spirally winding it on the five corrugated aluminum screen rolls. Each roll can accommodate about ten feet of 35 mm microfilm. The screen serves to separate the film allowing for acid attack on all sides of the film in case the destroying mechanism is activated. Film rolled on itself with no spacing between will not be completely destroyed.

The film is viewed by removing it from the spiral roll and placing it in the retainer clip on the viewer. The film should be pulled through the retainer clip gently to guard against tearing.

CLOSING THE CONTAINER

1. Replace the film stack.
2. Replace upper zinc plate.
3. Replace viewer.
4. Replace the cover securing mechanism, making sure that the extension clip is extended as far as it will go to insure a tight fit inside the container when the brass thumb screw is turned down tightly.
5. Place the smooth cap on the container and start the threads.
6. Place the magnet on the smooth cover and turn the cover down as far as it will go.

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7. Remove magnet. For security purposes, the magnet should not be kept anywhere near the film container.

THE FILM DESTROYING MECHANISM

It is expected that a person unwitting of the proper operating procedure would try to open the container as follows. Depending on the orientation of the container, he will try to unscrew the cap on the upper end of the container. If this is the smooth end, he will be able to turn it only the small distance permitted by the locking mechanism.

Being unable to remove this end, he will perhaps try to unscrew the other end with the recessed center. But in doing so he will rotate a carbide-tipped projector pin which is welded to the inside of the recessed cover until it scores and breaks a glass vial containing 100 cc of nitric acid. The acid immediately reacts with the zinc liner and starts a reaction which destroys the emulsion on the film. This is an exothermic reaction, and in a very short time the container will be too hot to hold. This will hamper any efforts to remove the cover before the acid had completely destroyed the emulsion.

BURYING THE CONTAINER

The container shell and both ends are made of heavy stainless steel and as such should be capable of withstanding burial for over five years under the most severe conditions. Certain precautions should be taken, however, to be sure of getting the maximum protection the container can offer.

Because there are rubber gaskets in each container cap and because rubber takes some permanent set with age, both ends must be turned down tightly prior to burial. With the smooth end this means only applying a good torque to the cap. It is difficult to supply sufficient torque with a person's own two hands. Two people should tighten it if possible, or one man can, using a vice.

To tighten the cover with the circular recess (which must be tightened before the smooth cover), it is necessary to first remove the glass acid vial from the container to prevent the possibility of rotating the cap to the extent that the projector pin comes in contact with the vial.

To remove the vial, first remove the film storing paraphernalia in the usual manner. Then remove the zinc liner and zinc bottom plate. This exposes the acid vial, which is wired to a keeper plate held in the container by two small machine screws. By removing these screws the acid unit can be removed, and the recessed cap can be tightened. The acid vial must be replaced very carefully to be sure that in tightening the cover the projector pin has not rotated so that it can come in contact with the acid vial. If it does, the acid vial will have to be repositioned in such a manner as to avoid the projector pin.

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